

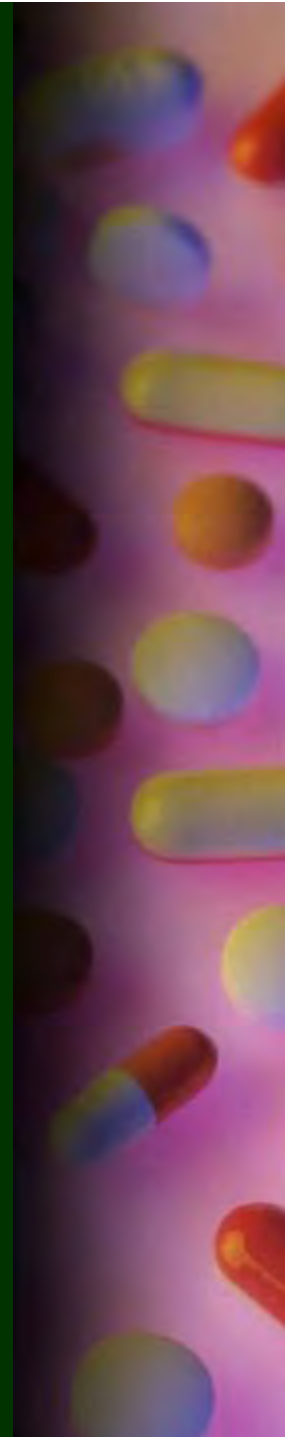
# Source Control for Pharmaceuticals – SF Bay Regional Update *(solid waste and wastewater issue)*

Karin D. North

City of Palo Alto

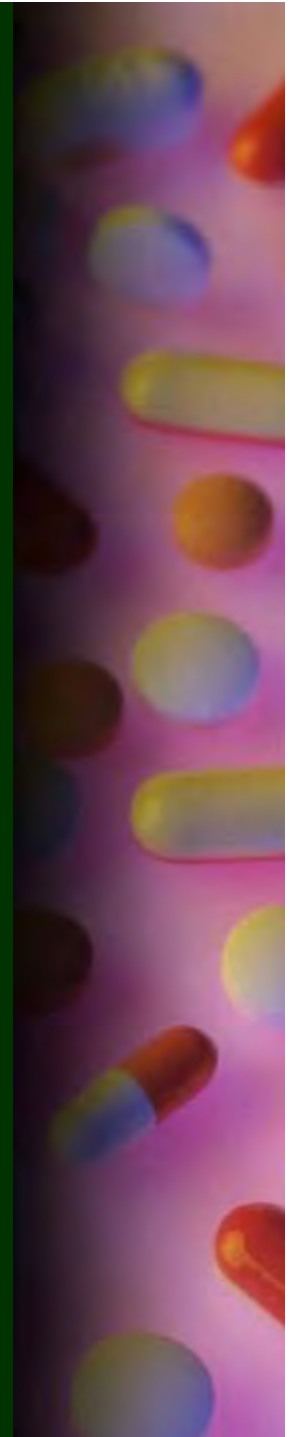
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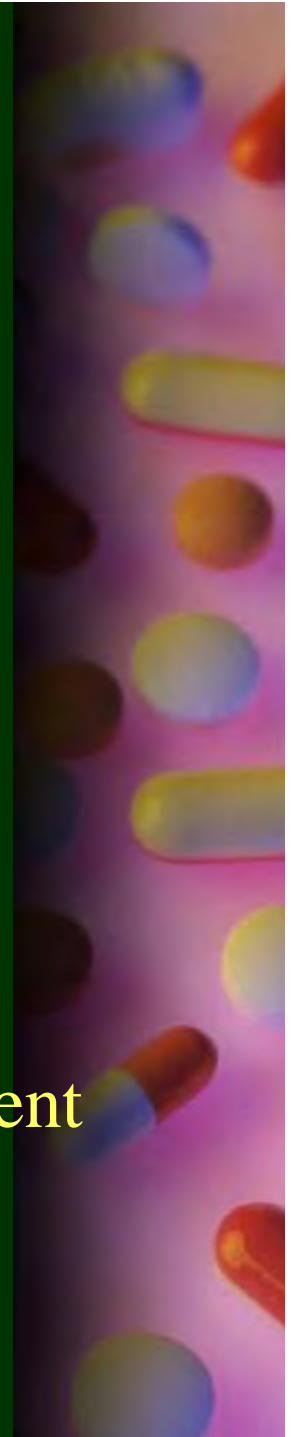
# US Waterways are Impacted!

- USGS Analyzed 139 streams- 80% of samples analyzed one or more of pharmaceuticals
  - Acetaminophen (24%)
  - Steroids and hormones (16%)
  - Diltiazem (blood pressure medication) (13%)
  - Codeine (11%)
  - Antibiotics and antimicrobials (10%)
  - Ibuprofen (10%)



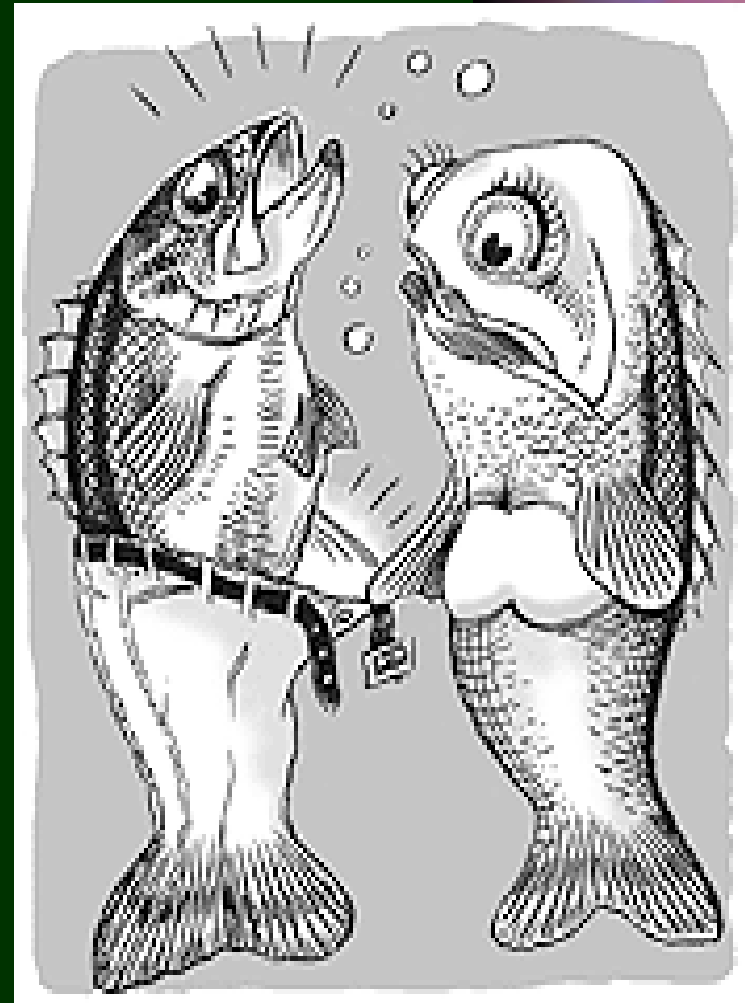
# Why Do We Care?

- Potential effects to organisms
  - Endocrine disruption
  - Synergistic effects
  - Possible toxicity
- Precautionary Principle
  - Pharmaceuticals should not be in the aquatic environment
  - Limited toxicological information on pharmaceuticals less than 1% of active ingredient products
- Creation of “superbugs”



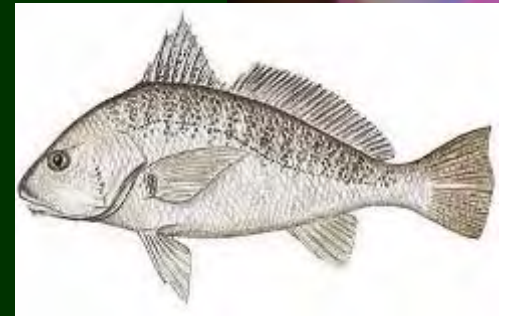
# 17alpha Ethynyl Estradiol

- Synthetic estrogen
- Present in 16% of rivers in USGS study
- Median concentration 73 ng/l
- Vitellogenin production (feminization) in male fish
- Effects at conc. as low as 1 ng/l



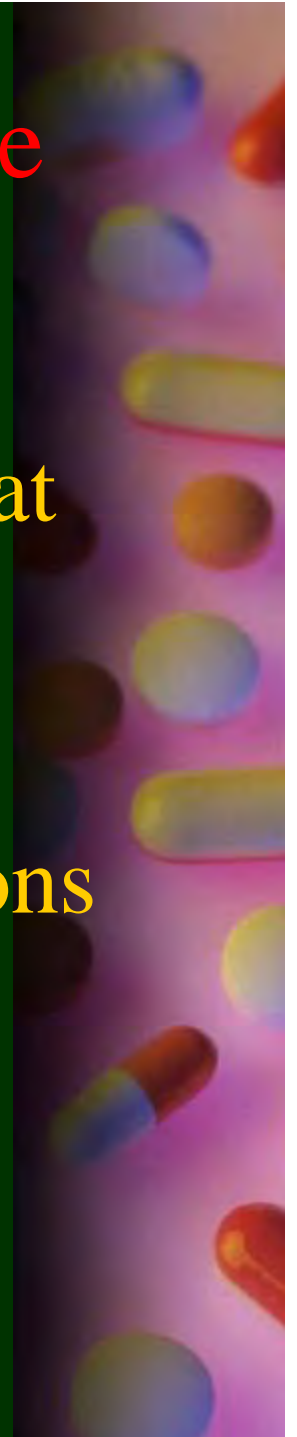
# Other Endocrine Disruptors

- SSRIs (antidepressants) induce spawning in shellfish
- Calcium channel blockers (used to lower blood pressure) dramatically inhibit sperm activity in Atlantic croaker
- Clofibrate (used to lower cholesterol) caused high production of estrogen in juvenile zebra fish at concentrations present in Chesapeake Bay



# How Pharmaceuticals Get Into the Environment

- Wastewater treatment plants that treat household, industrial, and business
- Industrial dischargers
- Commercial animal feeding operations
- Surface application of biosolids



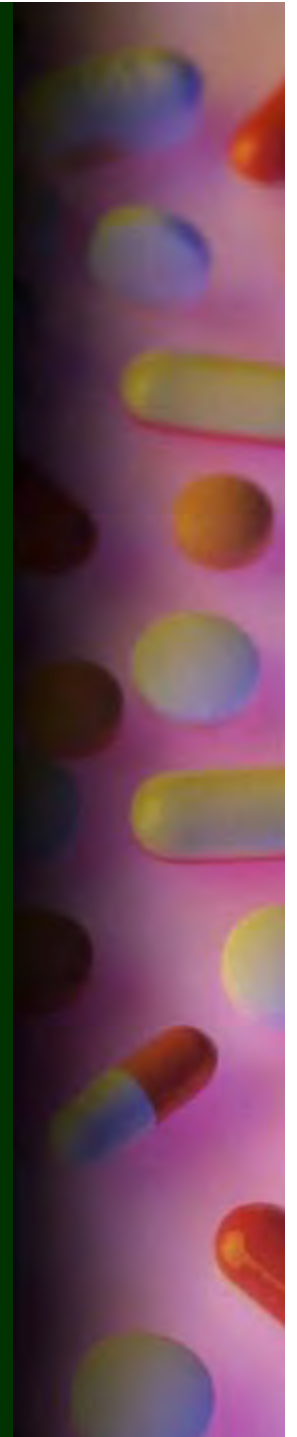
## *Drug Portal to the World*



adapted by Daughton from Ternes (April 20

# Increased News Coverage

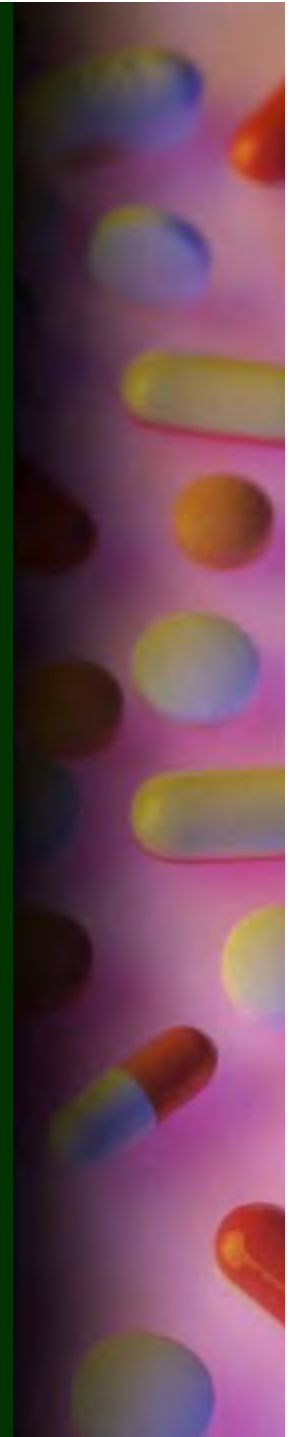
- News articles
  - LA Times
  - Washington Post
  - San Francisco Chronicle
- Articles
  - Western City Magazine
  - Costco





# Major Sources of Pharmaceutical Waste

- Regulated
  - Hospitals
  - Pharmacies
  - Assisted living facilities
  - Veterinary hospitals
  - Dentists
- Unregulated
  - Residents
  - Hospice patients



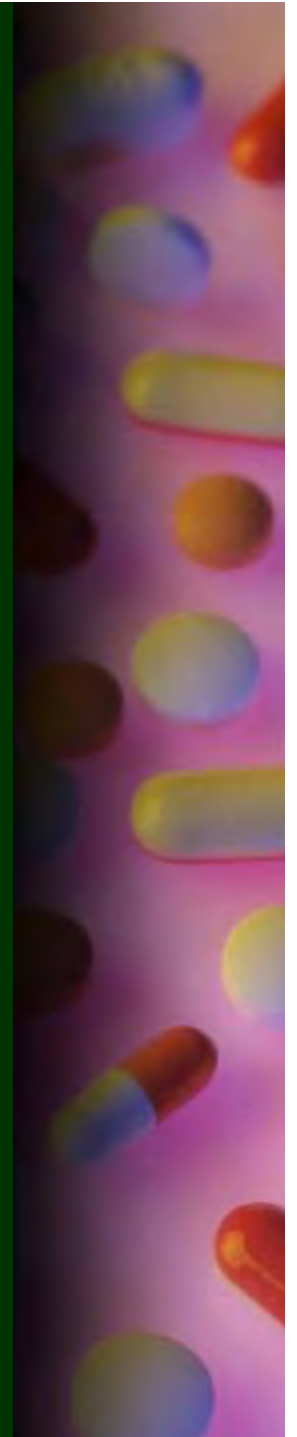
# Bay Area Hospital Training

- 2-hr workshop
  - “Navigating Pharmaceutical Waste in Medical Facilities”
  - Speaker Charlotte Smith with PharmEcology
  - Sponsored by BAPPG and SF
  - July 2005
- 160 attendees

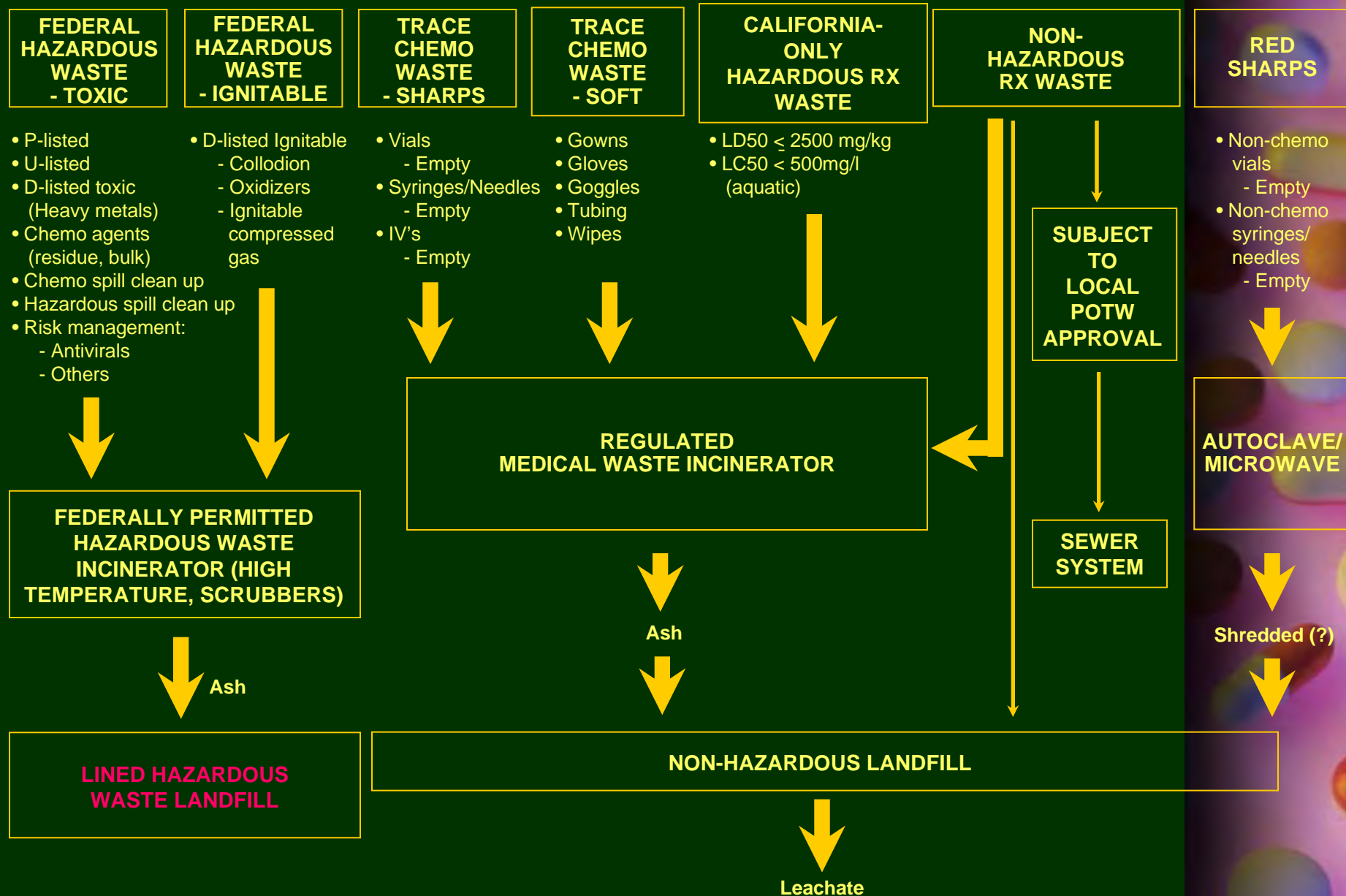


# Key Points from Training

- Pharmaceutical waste is extremely complicated
- Multiple laws/ requirements
- California has different requirements than federal requirements

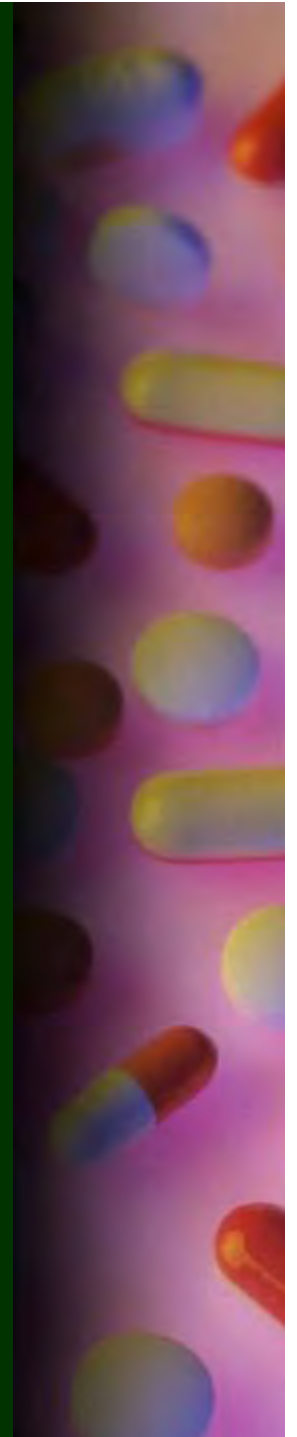


# Recommended California Pharmaceutical Waste Streams



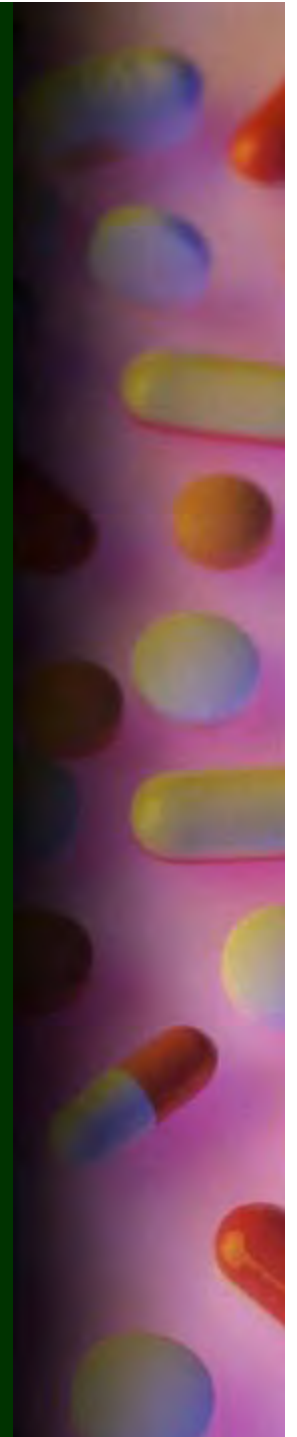
# Next Steps for Hospitals

- Create a guidance document for hospital staff regarding proper disposal of pharmaceutical waste
- Encourage pharmaceutical waste containers on nursing carts



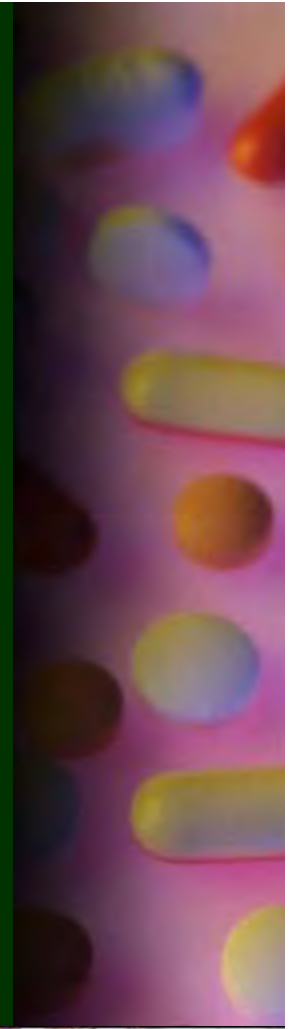
# Residential Pharmaceutical Waste

- Locally
- Regionally
- Potential legislation opportunities

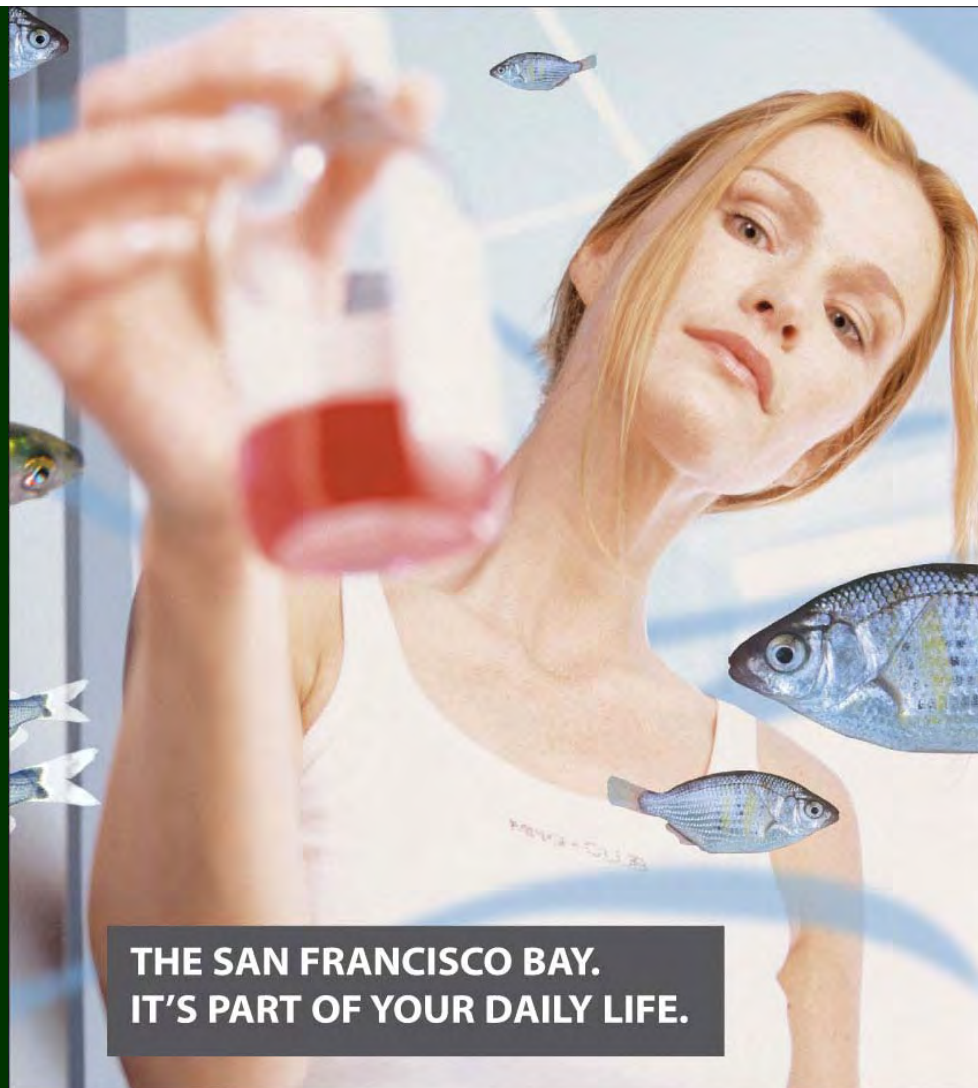


# Palo Alto Update

- Advertising HHW program since 2002
- In 2005, held collection events at 3 senior centers, health fairs, police stations etc
  - Collected over 200 lbs of pharmaceuticals
  - Advertised in senior newsletters, farmers market, and local paper
- In 2006, will hold disposal events at pharmacies and collect medications at the plant







**THE SAN FRANCISCO BAY.  
IT'S PART OF YOUR DAILY LIFE.**

**SO DON'T DUMP OLD MEDICINES INTO THE SINK  
OR TOILET.**

It's no exaggeration that we live and work in a watershed that flows to the Bay. The wrong things down the drain or toilet can harm Bay wildlife.

**DISPOSE OF OLD MEDICINES PROPERLY.**

Bring them to household hazardous waste collection events. Call 650.329.2598 for specific dates.

[www.cleanbay.org](http://www.cleanbay.org)  
**WE'RE ALL IN IT TOGETHER**



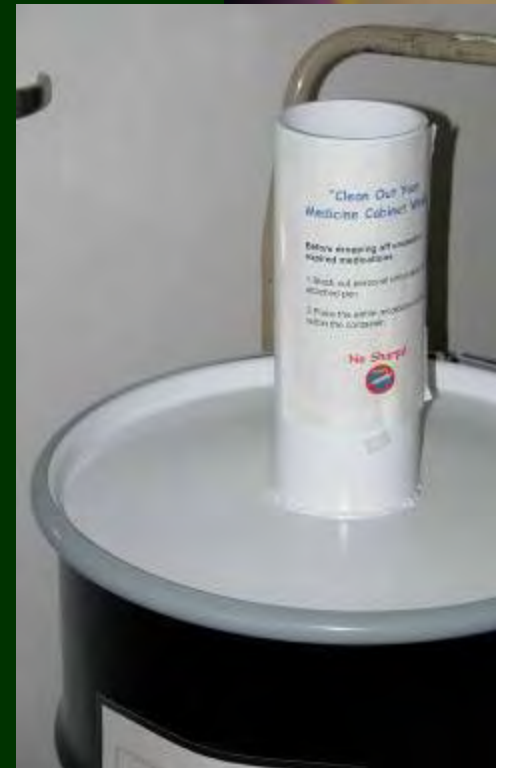
Regional Water Quality Control Plant for East Palo Alto Sanitary District, Los Altos, Los Altos Hills, Mountain View, Palo Alto and Stanford.





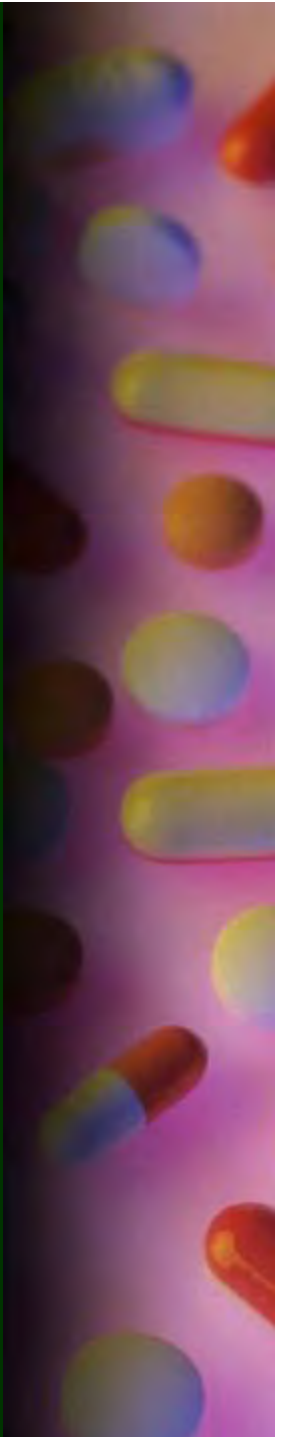
# Palo Alto Challenges

- Waste Containers
  - Originally started with sharp containers- did not work!
  - Now have 33 gallon drum with a stand pipe that can be locked
- Compliance with laws and regulations
  - DEA wants law enforcement present during collection events



## SF Bay Regional Update *Pilot Program Stats*

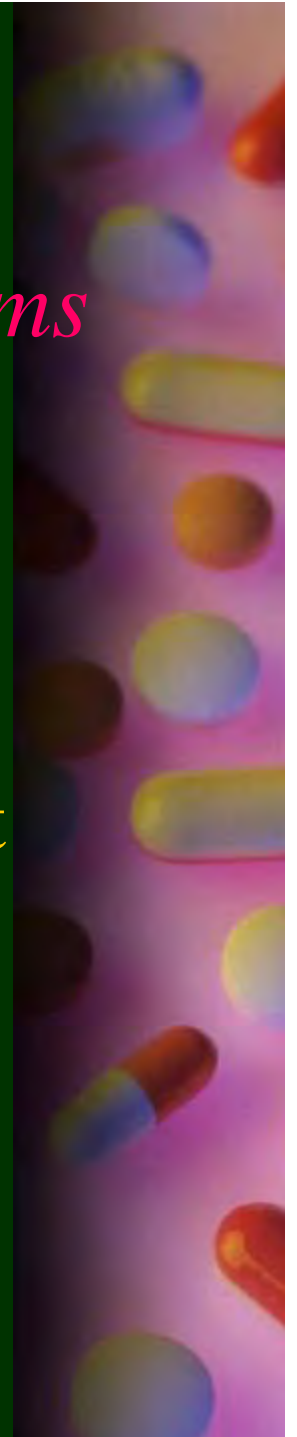
- **Marin County Health Department**
  - Currently, collects pharmaceuticals at 6 pharmacies
  - Collected over 300 lbs of pharmaceutical waste
- **San Mateo County HHW Program**
  - 13 cities participated, week long collection event
  - Collected 240 lbs of pharmaceutical waste
- **East Bay MUD and Save the Bay**
  - One-day event at Walgreens
  - Collected 30 lbs of pharmaceutical waste



## SF Bay Regional Update

### *Household Hazardous Waste Programs*

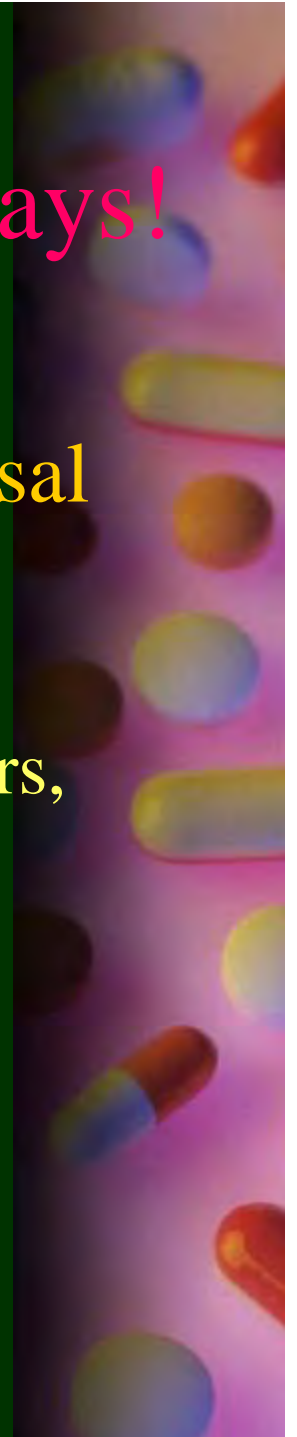
- Many HHW programs will not accept
  - Due to funding
  - Potential issues with controlled substances
- Some HHW programs continue to accept
  - No advertising
  - Small pilot program



# Regional Safe Medicine Disposal Days!

*May 13-20, 2006*

- Multiple wastewater agencies hold disposal events
  - 9 agencies confirmed to date
  - Over 30 locations (pharmacies, senior centers, civic centers, etc)
- Regional Advertising
  - BART and Buses
  - San Francisco and San Jose Newspapers



# Regional Safe Medicine Disposal Days Advertising!



## Safe Medicine Disposal Days Safer for your family, safer for the Bay

Flushing expired or unwanted medicine down the drain may harm San Francisco Bay. Wastewater treatment cannot remove all medicine, but with your help, local agencies are protecting the Bay.

Drop-off expired or unwanted medicine during our

### Safe Medicine Disposal Days, May 13-21, 2006!

For locations, dates and hours, visit

**[www.BayWise.org](http://www.BayWise.org)**

or call 1-888-BayWise.

**The fish will thank you!**

Drop-offs at select locations in San Francisco, Palo Alto, Oakland, San Jose, Millbrae, Sunnyvale, San Leandro, Fremont, Mountain View, Belmont, Menlo Park and more!



**BAY AREA POLLUTION  
PREVENTION GROUP**

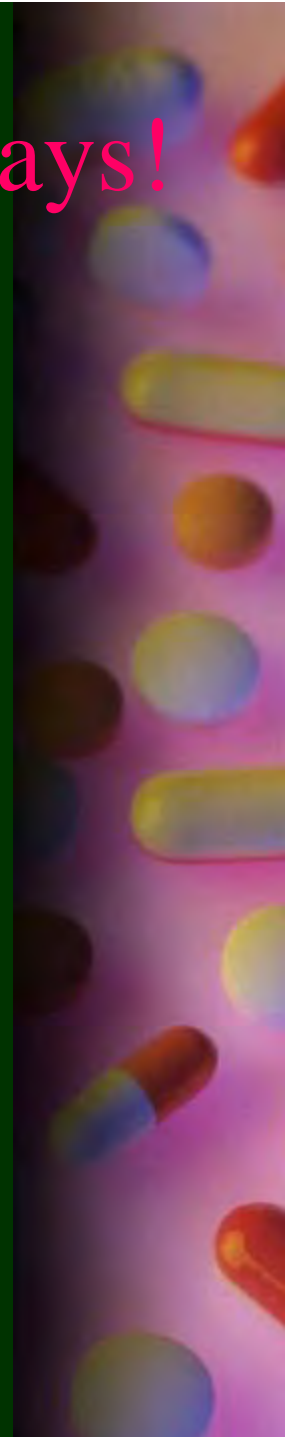


**Walgreens**  
The Pharmacy Superstore

# Regional Safe Medicine Disposal Days!

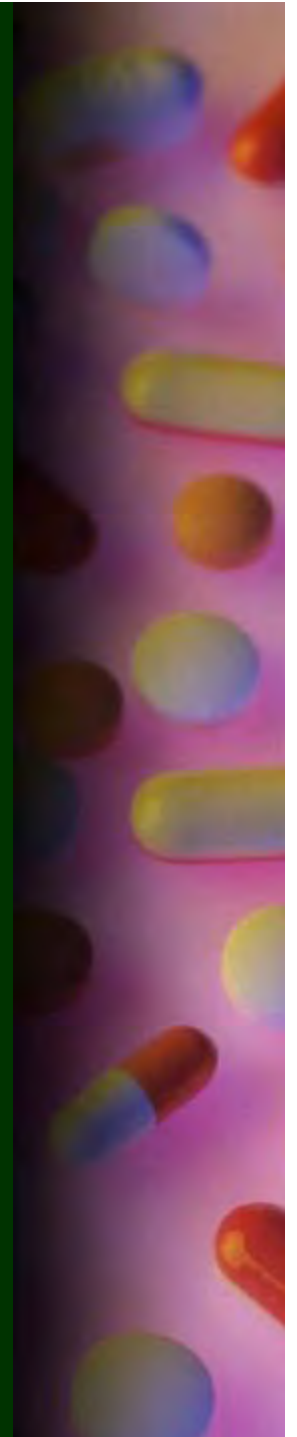
*May 13-20, 2006*

- By the letter of the law
  - Pharmacist present to sort medications
  - Controlled substances handled by local law enforcement
- Survey
  - Why disposing medicine
  - How they heard of the event
  - How dispose of medication in past



# SF Bay Regional Challenges

- Need police presence at all locations
- Buy-in from pharmacists
- Funding
  - Smaller agencies
  - HHW programs to continue to accept waste
- Mixed messages
- Need a long term solution





# Southern California Message

- Pressure to develop a solution now!
- Multiple agencies have buy in for program
- Partner with pharmacies

## NO DRUGS DOWN THE DRAIN



Unused prescription and over-the-counter medications that are put in drains or flushed down the toilet pollute the environment, so please take as prescribed and dispose of unused portions properly.

[www.nodrugsdownthedrain.org](http://www.nodrugsdownthedrain.org)

### UNUSED MEDICATIONS SHOULD BE

- 1**  
Taken to a household hazardous waste collection center or event (no controlled substances allowed) or
- 2**  
Put in a sturdy, securely sealed container, then in a trashcan where children and animals can't reach them.



In case of accidental poisoning call the California Poison Action Line at 1-800-222-1222  
24 hours a day





# Legislation Ideas

- Develop legislation that creates an easy solution for residential disposal of waste
- Explore existing infrastructure that pharmaceutical industry already has in place (*e.g., reverse distributor*)

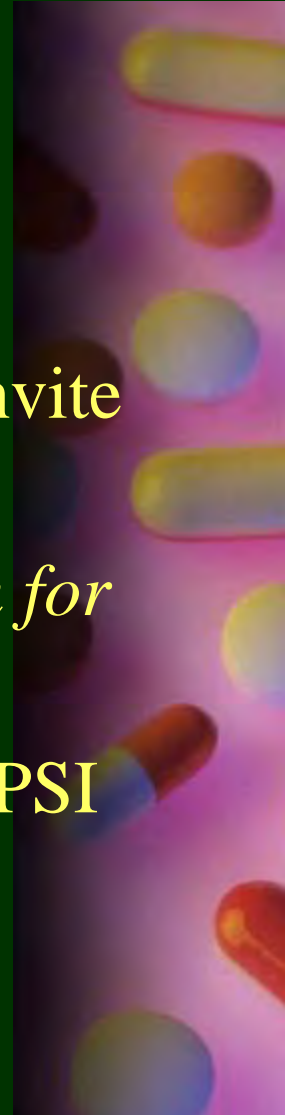


# PSI Project Phases



- **Phase I**

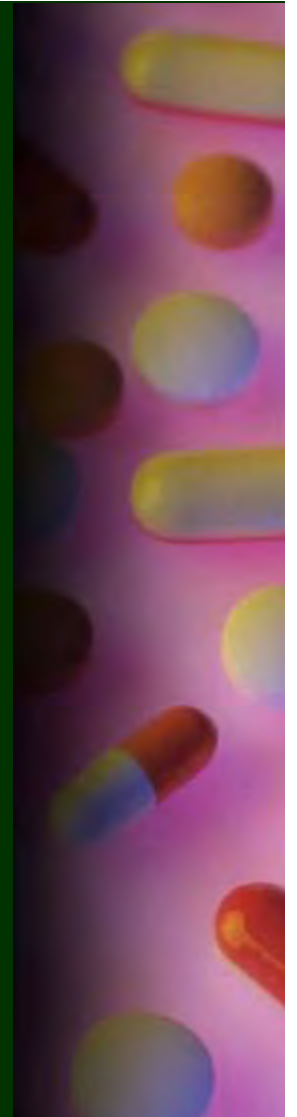
- Conduct literature search.
- Identify and summarize existing efforts.
- Identify and interview key stakeholders; invite participation in national dialogue.
- Develop *Product Stewardship Action Plan for Unwanted/Waste Pharmaceuticals*.
- Post *Action Plan* and project materials on PSI website.



# PSI Project Phases



- **Phase II**
  - Convene four national dialogue meetings with key stakeholders.
  - Convene workgroups between meetings.
  - Develop priority agreement(s) with key stakeholders.
  - Promote and disseminate project results through multiple venues.
  - *Timeline: November 2006 -October, 2007*
- **Phase III**
  - Jointly implement priority projects and initiatives.



# Contact Information

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